We currently have three exciting Neuroimaging PhD projects based at the Neuroscience Research Centre at St George's, University of London (SGUL, https://www.sgul.ac.uk/) that are open for competitive application as MRC LID studentships (http://mrc-lid.lshtm.ac.uk). Interested candidates are encouraged to contact supervisors for more detailed project information prior to application.

Information on how to apply and the deadline for applications are as follows:

How to apply: http://mrc-lid.lshtm.ac.uk/apply/
Application deadline: Midnight (GMT) Sunday 14 January 2018.

The research projects we are offering are:

1) **Non-invasive biomarkers for predicting dementia**

Supervisors: Dr Thomas Barrick (SGUL), Dr Rebecca Charlton(Goldsmith's University, Dr Christian Lambert (SGUL)

Alzheimer's disease and vascular dementia are the most common dementias. Predicting individuals at risk of progression to dementia remains an unmet clinical challenge. Reliable well-validated biomarkers are required to predict long-term outcomes, monitor disease progression and objectively identify disease subtypes.

This project will develop new techniques for advanced image segmentation and multivariate machine learning, and use these to identify novel biomarkers in Alzheimer's disease and vascular dementia by combining neuroimaging, clinical and genetic information. These techniques will be applied to data from the UK Biobank to identify individuals at risk of progression to mild cognitive impairment and dementia.

For further information see http://mrc-lid.lshtm.ac.uk/files/2017/11/Barrick-Charlton-Lambert.pdf

2) **Novel neuroimaging biomarkers for diagnosis and prediction of Parkinson's Disease progression**

Supervisors: Prof Mark Edwards (SGUL), Dr Thomas Barrick (SGUL), Dr Christian Lambert (SGUL)

Parkinson's disease (PD) is a common degenerative neurological disease that displays substantial clinical variability, both at presentation and in progression, due to individual differences in anatomy, neurodegeneration and treatment. Reliable well-validated biomarkers are required to predict long-term outcomes, monitor disease progression and objectively identify disease subtypes.

This project will develop and apply new techniques for combination of neuroimaging, clinical and genetic information to better identify and predict progression of PD. Advanced image segmentation and multivariate machine learning techniques will be applied to two large-scale datasets (Progression in Parkinson's Markers Initiative and UK Biobank) to better diagnose individuals with early or preclinical PD, predict disease progression and identify disease subtypes.

For further information see http://mrc-lid.lshtm.ac.uk/files/2017/11/Edwards-Barrick-Lambert.pdf

3) **MRI radiomics of adult brain tumours**

Supervisors: Prof Franklyn Howe (SGUL), Dr Xujiong Ye (Lincoln University), Mr Timothy Jones (SGUL, St George's NHS Trust)

Radiomics is an exciting new field in diagnostic imaging that analyses the features of large numbers of images, to characterise a disease for more personalised medicine. Brain tumours are very heterogeneous and new biomarkers are needed to aid diagnosis and optimal treatment selection for each patient. This project is based at St George's, University of London, in collaboration with the Laboratory of Vision Engineering at Lincoln University. Machine Learning, including deep learning, methods will be applied to clinical and multimodal advanced MRI to further develop brain tumour segmentation, texture and shape analysis methodology, and characterise these tumours in relation to their histopathology, genetic variants and patient outcome.

For further information see http://mrc-lid.lshtm.ac.uk/files/2017/11/Howe-Ye-Jones.pdf