

## **TCS/19/44 - Proving the Utility of Fast Field Cycling MRI in stroke and small vessel disease (PUFFINS)**

Fast field cycling MRI (FFC-MRI) is an innovative imaging technology pioneered at the University of Aberdeen. It has the ability to image human tissues non-invasively over a wide range of magnetic field strengths, directly informing on multi-scale tissue structure from nanometres to micrometres. This is not possible with traditional MRI. The world-first whole body clinical FFC-MRI scanner was commissioned in Aberdeen in 2016. Preliminary results from stroke patients show that the area of damage in the brain can be identified at magnetic fields 10,000 times lower than those used in conventional clinical MRI scanners. The purpose of this application is to compare FFC MRI and standard MRI images from patients with strokes due to blocked blood vessels or haemorrhage as well as in people with small vessel disease. The data gained will be used to develop methods to extract the most information from the FFC MRI scans. The study will reveal where this safe and affordable technology can fit with standard stroke imaging. It will also underpin development of new image analysis techniques, which will be used for future studies focusing on other diseases such as cancer and liver disease.