TCS/22/32 - Combined Targeting Of Oedema And Neuronal Plasticity As A New Therapeutic Framework To Treat Ischaemic Stroke.

Stroke is often fatal and 2/3 of stroke survivors are left with a disability. With over 1.2 million stroke survivors in the UK, many people are affected in this way. In the long-term, those who have had strokes are also twice as likely to develop dementia. Existing stroke treatments restore blood flow to the brain helping brain cells survive. However, when blood flow is restored further damage can occur as swelling caused by water accumulation into brain tissue crushes it against the skull, presenting a serious risk of death. This project will investigate a promising new treatment for stroke, using drugs to stop water accumulation and to 'rewire' connections, improving recovery speed and decreasing dementia risk. These drugs have already been used to treat other conditions in the clinic. We now want to find out whether we can use (or 'repurpose') them to treat stroke. The benefit of a repurposing approach is that they could reach the clinic sooner as we already know how they work and what doses are safe to use. We will use rats with high blood pressure, the main risk factor for stroke, along with work on individual cells of the brain (including a new cell-based 'brain-on-a-chip' platform) to discover whether these drugs can be repurposed. We'll measure stroke-based damage to brain tissue and cells, and how this affects the behaviour and memory function of the rats. This will help us prove how the new treatment works, bringing it closer to clinical use.