Ambitious research project trials promising new therapy for motor neurone disease

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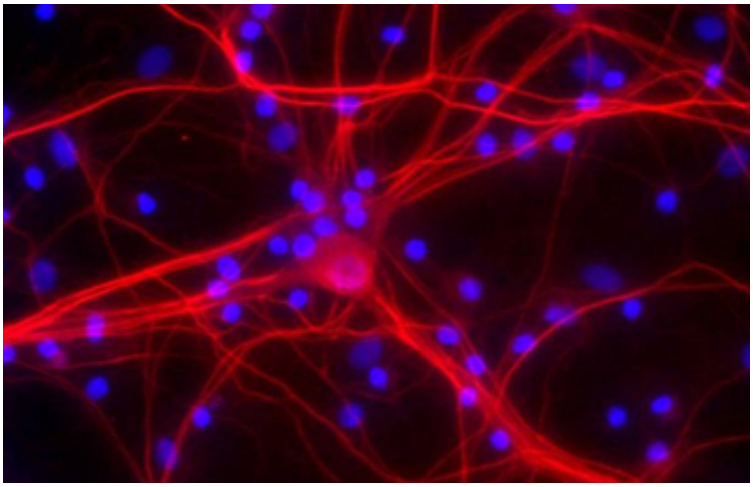

Researchers from the University of Sheffield's Institute for Translational Neuroscience are involved in an ambitious European research project aimed at finding a new treatment for motor neurone disease (MND).

The collaboration between world-leading academic research groups aims to identify the therapeutic potential of a molecule (interleukin-2) that occurs naturally in our bodies and helps to regulate our immune system and the inflammation that contributes to motor neurone injury in MND.

Currently, a low dose of the molecule, interleukin-2 (IL-2), is being developed for the treatment of conditions affecting the immune system,

including diabetes, arthritis, liver disease, and the complications of treating leukaemia and other cancers with stem cells.

While IL-2 has been used for many years at high dose to treat cancer, it is much safer – but still effective – when used at low doses in these immune disorders, as it can damp down harmful immune responses.

"Our main objective is to achieve a breakthrough in the treatment of MND by significantly slowing the progress of the disease through a low dose of IL-2," said Dr Gilbert Bensimon, University Hospital, Nimes, France, who is project leader of Modifying Immune Response and Outcomes in Amyotrophic Lateral Sclerosis (MIROCALS).

To date, only one drug – riluzole – has been shown to slow the advance of MND, but its impact on the quality of life of people with the illness is marginal. Many other drugs have been tested but have failed.

Professor Nigel Leigh, co-lead and chief investigator for the clinical trial, of Brighton and Sussex Medical School, said: "We are delighted to be collaborating with world-leading research groups in biomarker development, immunology, genetics and gene expression on this project. This collaboration will allow us to research a number of factors that may affect MND. Taken together, these analyses should allow us to 'individualise' responses to treatment that may be revealed during the study."

In May, MIROCALS was awarded €5.98 million by the European Commission Directorate-General for Research and Innovation, under the EU Horizon 2020 Scheme. Additional support for the Clinical Centres has been awarded by the French Health Ministry Programme de Recherche Clinique (PHRC) in France and is under consideration by the MND Association in the UK.

Other novel features of the MIROCALS study include:

- the incorporation of 'biomarkers' to monitor the activity of the disease, the state of the immune system, and their responses to low-dose IL-2
- the inclusion of people newly diagnosed with MND. This means that researchers can monitor treatment from an early stage in the evolution of the disease and maximise the potential to detect benefit from low dose IL-2
- the study of complex genetic factors that may contribute to the response to treatment with riluzole and/or low dose IL-2.

Project planning will start in September this year and researchers intend to recruit the first patients into the trial by September 2016. They aim to complete the study in 2019. In the meantime, the team is working on the essential groundwork for MIROCALS, including a small pilot study in France.

Professor Leigh adds: "In addition to developing a new treatment for MND, MIROCALS aims to provide a new approach to clinical trials to break the impasse in developing new treatments for progressive disorders that include MND, dementia and Parkinson's disease.

Professor Pamela Shaw, Director of SITraN and one of the principal investigators involved in this study said: "This is a very exciting experimental medicine study involving several leading European centres for MND research. Not only will we be able to investigate whether interleukin-2 slows the disease course in MND by modifying the inflammatory response within the nervous system, but we will also be investigating in the SITraN laboratories, in a work-package led by Dr Janine Kirby, biomarkers which will tell us at an early stage whether the treatment is beneficial and whether all patients or a particular subgroup develop a positive response. We were very fortunate to receive funding

support for this programme from the EU Horizon 2020 programme and the MND Association in a very stringent grant funding competition."

Provided by University of Sheffield