

High Throughput Screening of MS Patient Blood to Identify Causative Immune Cell Subsets **2020-2022**

A 2-year study by Professor Lars Fugger and his team at Oxford Centre for Neuroinflammation at The University of Oxford based at John Radcliffe Hospital.

In MS, powerful and aggressive drugs are used to reduce inflammation and slow down disability. As many of these drugs can have significant side effects they are only used once the MS has progressed. However, it is now thought that neurological damage occurs much earlier in the disease process and can even be detected in those with very few symptoms. Therefore, we need better diagnostic and predictive tests to treat those cells involved at an early stage which may then prevent disability.

This study is looking at how environmental triggers may affect certain genes and how this may alter the risk of MS and its clinical progression. The team will analyse blood immune cells taken from those with MS before and during treatment with a specific drug which is currently used in MS. This will give information about how these immune cells change through the treatment course and how these changes correlate with the individual's clinical response to the treatment. They will analyse single cells to gain more knowledge of the complexity of the immune system and to identify which specific cells are involved and can subsequently be used as a target for therapy.

This information will hopefully pave the way for development of therapies aimed at specific cells rather than current regimes which affect the whole immune system. This will allow more effective treatments with fewer side effects to be used at much earlier stages of MS thus preventing neurological degeneration without the risk of significant side effects.

Aims2Cure will fund the initial pilot study. This will be for 2 years and will be used to look at data from a small number of patients. This is a proof-of-concept study, the aim is to then expand and extend this research, using this pilot data to allow the team to secure more extensive funding going forwards.