

**Manchester Interdisciplinary Collaboration for Research on Ageing (MICRA)
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Title: The role of inflammatory markers in age-related cognitive decline

Research team:

Chris Murgatroyd – School of Healthcare Science, Manchester Metropolitan University;

Tony Payton – School of Psychological Sciences, University of Manchester

Neil Pendleton - Salford Royal NHS Foundation Trust, University of Manchester

Jamie McPhee – School of Healthcare science, Manchester Metropolitan University

Mark Slevin - School of Healthcare science, Manchester Metropolitan University

The immune system of older people declines in reliability and efficiency with age, resulting in greater susceptibility to disease. Inflammation is also a potential catalyst for age-related cognitive decline.

Current research suggests that levels of inflammatory markers change with age and that these correlate with cognitive decline and are further altered in neurodegenerative diseases. Studying panels of peripheral immune markers we have identified numerous pro-inflammatory factors that are increased during ageing and one specific factor that is further increased in those with reduced cognitive function.

In this study we will address whether peripheral levels of this inflammatory marker relate to alterations of this factor in the brain and how this relates to cognitive decline. We will further explore the role of genetic and epigenetic changes in the regulation of the factor.

This study will focus on the Dyne-Steele cohort of samples from 1800 elderly volunteers followed for changes in cognitive functioning. Cognitive phenotypes have been generated for vocabulary ability, processing speed, memory and fluid intelligence. Importantly, this cohort has brains, DNA and some serum available allowing us to correlate markers in brain tissue with longitudinal changes in cognition.

A good understanding of how age-related inflammatory changes impact cognition would allow us to promote strategies that reduce age-related inflammation that may improve the quality of life in older adults. For example exercise and obesity are known to affect inflammation. Furthermore, the identification of important biological targets could allow for drug-based interventions to treat age-related cognitive decline.

The work funded by the MICRA seedcorn grant will allow us to build this neuroinflamm-ageing research in the UK and within Manchester to benefit UK adults.