



Application number/Title: 34991 - Association between FOXO3 genetic variants and cognitive performance in aged individuals

Applicant PI: Dr Ashley Webb

Application Institution: Brown University, USA

Keywords provided by the Applicant PI to describe the research project:

ageing, cognition, foxo3, intelligence

Application Lay Summary:

The goal of the proposed research is to determine if variants in a particular gene, FOXO3, are associated with cognitive function in aged individuals. FOXO3 is a conserved regulator of aging and longevity. In several published studies, single nucleotide polymorphisms in FOXO3 have been linked to longevity and human intelligence. Our study will address the unanswered question of whether these SNPs are linked to cognitive performance in the elderly. This work will provide insight into whether allele status that is associated with longevity is connected to preservation of cognition with age. This work aligns with the mission of the UK Biobank because it will contribute to our understanding of the genetic factors affecting cognitive function in the elderly. Decline in cognitive function is a hallmark of aging and a major feature of neurodegenerative disease, but the underlying causes remain incompletely understood. Understanding the link between genetic factors that promote healthy aging and preserve learning and memory in aged and diseased individuals has the potential to promote health throughout society. We will extract SNP information for each participant at the FOXO3 locus and determine SNP frequency. We will then bin the population by age and determine SNP frequencies in each group. We will then correlate these SNP frequencies with intelligence response scores from 13 intelligence questions answered by each participant. We will determine if there is a decline in performance on these tests with age independent and/or correlated with FOXO status. The full cohorts are needed. The complete dataset is necessary to evaluate the association between FOXO3 SNPs and cognitive performance with age.