Application number/Title: 42614 - Statistical methods for discovery and validation of associations with cardiovascular and aging traits and their associated risk factors

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

Aging, cardiovascular, genetics/genotyping, polygenic, risk-factors, statistical methods

Application Lay Summary:

Tremendous success has been achieved by genome-wide association studies in identifying genetic variants associated with aging traits, cardiovascular diseases and their associated risk factors. However, despite this success, much of the genetic variability in these traits remain unexplained. Large sample sizes and novel statistical approaches are required to uncover variants with small effect on these traits, and to gain a complete understanding of the underlying mechanisms of disease.

We aim to use the UK Biobank data to discover novel associations with aging and cardiovascular traits and their associated risk factors, to validate findings identified in other consortium, develop polygenic risk scores, and to apply and develop statistical approaches to perform of comprehensive analysis of multiple traits, multiple variants, multiple covariates, allowing for gene x gene and gene x covariate interactions.

Our goal is to gain a better understanding of the influence of genetic and environmental risk factors on these diseases. This new knowledge will lead to the development of new diagnosis, prevention and hopefully the identification of potential therapeutic targets, and improve the health of an aging population.