



**Application number/Title: 32133** - Integration of multi-organ imaging phenotypes, clinical phenotypes, and genomic data

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**Keywords provided by the Applicant PI to describe the research project:** anthropometric, cardiovascular, genetic, imaging, lifestyle, neurological

**Application Lay Summary:**

There is evidence for a strong relationship between cardiovascular and neurological diseases but the genetic basis of this association has not been explored and studies performed thus far have not provided biomarkers of early disease progression. This research aims to examine pleiotropic associations between brain and heart image-derived phenotypes using candidate genes associated with late-onset neurological and cardiovascular-diseases. This means that we are looking at genes that are linked with heart and brain related traits and trying to understand the relationship between these diseases. Apart from having the potential to greatly advance our current understanding of the common genetic mechanisms of cardiovascular and neurological disease, this effort can also lead in improved diagnosis and development of better treatment modalities. We will develop advanced statistical models and machine learning algorithms that can integrate image-derived phenotypes with genome-wide genotype information to meet the stated aims of the project.