

# Brain imaging and cognitive ageing in the Lothian Birth Cohort 1936: III

<https://neurodegenerationresearch.eu/survey/brain-imaging-and-cognitive-ageing-in-the-lothian-birth-cohort-1936-iii/>

## Principal Investigators

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## Contact information of lead PI Country

United Kingdom

## Title of project or programme

Brain imaging and cognitive ageing in the Lothian Birth Cohort 1936: III

## Source of funding information

MRC/AGE UK

## Total sum awarded (Euro)

€ 4,816,303

## Start date of award

01/05/2015

## Total duration of award in years

4.0

## The project/programme is most relevant to:

Neurodegenerative disease in general

## Keywords

### Research Abstract

Studying the changes in brain structure that accompany older age may be useful for understanding cognitive ageing and reducing the risk of dementia in the elderly. We seek funds to acquire a 3rd wave of brain MRI and a 2nd wave of carotid Doppler ultrasound data from the Lothian Birth Cohort 1936, a large group of relatively healthy subjects in their late seventies. This cohort has a wide range of phenotypic data available from older age (at 70, 73, 76; 79 to

be done) including cognitive, genetic, epigenetic, lifestyle, etc. Uniquely, they also have a measure of childhood intelligence from age 11. These subjects have already undergone brain MRI at ages 73 and 76, and vascular imaging at age 73. Repeat brain MRI and ultrasound scanning at age 79 will provide multi-time-point longitudinal imaging data across the eighth decade of life. This will be used to investigate associations between older age brain structure, vascular, genetic and other risk factors, and cognitive ability across the life course.

This 3rd wave of brain MRI will be undertaken on the same GE 1.5T clinical scanner as used in the first two examinations. The imaging protocol will consist of structural, diffusion tensor (DT), magnetization transfer (MT) and quantitative T1-mapping sequences. The structural scans will be analyzed to provide measures of brain atrophy, cortical thickness and white matter hyperintensity volume. The DT, MT and T1 data will be used to segment a range of major white matter tracts and provide measures of the integrity of these structures.

These imaging data will be analyzed using methods such as structural equation and longitudinal latent growth curve modelling to examine associations, both cross-sectionally and longitudinally, with cognitive, genetic, epigenetic, lifestyle, and other phenotypic data to provide insights into the factors driving non-pathological cognitive ageing. The carotid Doppler ultrasound data will be used as outcome and predictor variables.

### **Lay Summary**

**Further information available at:**

#### **Types:**

Investments > €500k

#### **Member States:**

United Kingdom

#### **Diseases:**

Neurodegenerative disease in general

#### **Years:**

2016

#### **Database Categories:**

N/A

#### **Database Tags:**

N/A