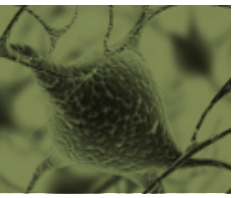

FUNDED PROJECTS

MESCOG \\ MECHANISMS OF SMALL VESSEL RELATED BRAIN DAMAGE AND COGNITIVE IMPAIRMENT: INTEGRATING IMAGING FINDINGS FROM GENETIC AND SPORADIC DISEASE.

Austria\ Canada \ Finland \ France \ Germany \ Italy \ Israel \ Luxemburg \ Poland \ Romania \ Spain

We hypothesise that CADASIL, a hereditary small vessel disease (SVD), and common sporadic forms of SVD have shared mechanisms and that integrating imaging data from both conditions will allow defining key mechanisms of small-vessel related brain damage and associated cognitive impairment. MESCOG investigators will use their combined patient, family and population-based resources and apply state of the art image post-processing and analytical tools to address the following scientific aims in a collaborative effort:

- delineate the mechanisms of incident lacunar infarcts and their consequences on anatomically connected brain regions.
- identify strategic locations for subcortical ischemic lesions and cognitive performance.
- explore the mechanisms and clinical impact of cortical changes in patients with SVD.
- provide a detailed account of microstructural changes in the normal appearing brain and their imaging and cognitive correlates.
- provide integrated models predicting cognitive impairment in SVD.

Our approach builds on two prospective observational cohorts collected by MESCOG PIs with longitudinal data already available: 320 patients with CADASIL and 820 community-dwelling middle aged and elderly participants.
Using machine learning processes data will be integrated into joint models to identify general mechanisms of small vessel related brain damage and cognitive impairment. Validation of the final models will then be performed in external cohorts. Our ultimate goal will be to provide novel predictive instruments, markers and targets for therapeutic trials.

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