

# Functional imaging of dementia

<https://www.neurodegenerationresearch.eu/survey/title-of-pifunctional-imaging-of-dementia/>

## Title of project or programme

Title of PI Functional imaging of dementia

## Principal Investigators of project/programme grant

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- Netherlands

## Source of funding information

Dutch Alzheimer's Association (Azheimer Nederland)

## Total sum awarded (Euro)

510000

## Start date of award

01-01-2008

## Total duration of award in months

60

## The project/programme is most relevant to

- Alzheimer's disease and other dementias

## Keywords

### Research abstract in English

It is well known that a high percentage of patients with mild cognitive impairment (MCI) develop in a later stage Alzheimer disease (AD) or vascular dementia (VaD). Functional MRI (fMRI) can detect early changes in brain function associated with cerebrovascular damage, and Diffusion Tensor Imaging MRI (DTI) can detect microstructural vascular changes in the brain. The research aim of our

fMRI study is to prospectively investigate the contribution of advanced imaging techniques for the prediction of VaD and AD in a cohort of patients with MCI. For this study, activation and DTI changes in prefrontal and frontoparietal brain areas will be compared between a group of MCI patients, aged 65 or older, with cerebral small vessel disease on MRI, MCI patients without cerebral small vessel disease and healthy controls. Results of this study may help us to predict at-risk patients, who might be involved in future pharmacological interventions.

Full-blown frontotemporal dementia (FTD) has been associated with changes in social behaviour, cognitive functioning and connectivity changes on RS-fMRI. Our second research aim is to investigate changes in RS- and task-related fMRI in early FTD and in presymptomatic stage. Extensive neuropsychological testbattery, social cognition tasks and RS-fMRI will be performed longitudinally over 4 years-period in presymptomatic mutation carriers from PGRN and MAPT families, and controls. In addition, task-related fMRI with the experimental setting of conflict with group opinion and social conformity will be carried in patients with early FTD, presymptomatic carriers and controls. If these techniques prove to be reliable tools to detect earliest changes in the disease process, these techniques can be used as functional biomarkers in clinical practice and pharmacological trials. The package of protocol and data set of RS-fMRI and task-related fMRI changes can be applied as products to other university centers all over the world.

### **Lay summary**

#### **In which category does this research fall?**

- Clinical research