

# Network Neurodegeneration in Alzheimer's Disease

<https://www.neurodegenerationresearch.eu/survey/network-neurodegeneration-in-alzheimers-disease/>

## **Name of Fellow**

## **Institution**

## **Funder**

European Commission FP7-Seventh Framework Programme

## **Contact information of fellow**

## **Country**

EC

## **Title of project/programme**

Network Neurodegeneration in Alzheimer's Disease

## **Source of funding information**

European Commission FP7-Seventh Framework Programme

## **Total sum awarded (Euro)**

€ 270,313

## **Start date of award**

07/04/14

## **Total duration of award in years**

3.0

## **The project/programme is most relevant to:**

Alzheimer's disease & other dementias

## **Keywords**

Alzheimer's disease | early-onset | PET | MRI | amyloid | tau | atrophy | functional connectivity | posterior cortical atrophy | logopenic aphasia | graph theory | nodal stress | trans-neuronal spread

## **Research Abstract**

Alzheimer's disease (AD) is a highly prevalent neurodegenerative disease associated with gradual loss of cognitive functions and brain vitality. The leading "amyloid cascade" hypothesis

for the pathogenesis of AD states that amyloid- $\beta$  (A $\beta$ ) starts to accumulate ~15 years before symptom onset and starts a cascade of pathological events, including aggregation of tau. It is known (mainly from post-mortem and animal studies) that these proteins may cause disruptions in brain networks, neurodegeneration and eventually cognitive decline. It is unclear, however, how these processes interact in the living human brain and this incomplete understanding of disease mechanisms may partially account for the lack of successful treatment options to date. The recent advent of a novel PET tracer for tau, however, allows for the very first time in-depth testing of the amyloid cascade hypothesis in vivo. Drawing on state-of-the-art PET and MRI techniques, this project will investigate how A $\beta$ , tau and neurodegeneration relate to each other and to brain connectivity. More specifically, it will 1) unravel spatial overlap between the AD hallmark pathologies and neurodegeneration, and 2) investigate how the brain's functional architecture shapes vulnerability to A $\beta$ , tau and neurodegeneration in AD. This project offers an innovative and multidisciplinary "network model of neurodegeneration" approach to the problem of clinical, anatomical and molecular heterogeneity in AD. By producing high-quality output and using the international networks of University of California San Francisco (outgoing host) and VU University Medical Center (return host), this fellowship will play a vital role in diversifying and consolidating the fellow's new research line. He will be exceptionally well prepared to design and develop his own research program in AD and undertake international competitive research within the European Research Area that integrates cutting-edge neuroimaging and cognitive measures.

**Types:**

Fellowships

**Member States:**

N/A

**Diseases:**

Alzheimer's disease & other dementias

**Years:**

2016

**Database Categories:**

N/A

**Database Tags:**

N/A