# Increased understanding of Alzheimer's Disease pathophysiology through novel cerebrospinal fluid markers: Results from the EMIF-AD MBD study

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## Facts & Figures

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| Project website: | www.emif.eu |
| Social media: | @IMI_EMIF |

## Challenge

- Increase understanding of pathophysiology of Alzheimer's disease (AD) and the discovery of novel biomarkers, will enhance development of novel therapeutics for AD.
- To identify novel targets for therapeutics we investigated the associations between established (Aβ) and novel (Neurogranin, Ng; Neurofilament-light, NFL; YKL-40) biomarkers in cerebrospinal fluid (CSF)
- In addition we also investigated the associations with cognitive decline

## Approach & Methodology

- Foundation of the EMIF-AD Multimodal Biomarkers Discovery study which only re-uses existing data, samples and scans
- For the CSF part of the EMIF-AD MBD study we selected 770 individuals across the cognitive spectrum for whom data and samples were collected as part of 2 multicentre and 8 single centre cohorts
- CSF samples were sent to Gothenburg University for central analyses

## Results

- CSF NFL, Ng and YKL-40 increased in pre-dementia AD
- Ng and tau specific for Aβ in dementia stage
- NFL and YKL-40 also abnormal in Aβ- individuals with dementia
- NFL and Tau best predictors of cognitive decline independent of Aβ status
- YKL-40 only has an influence on cognitive decline in Aβ- individuals

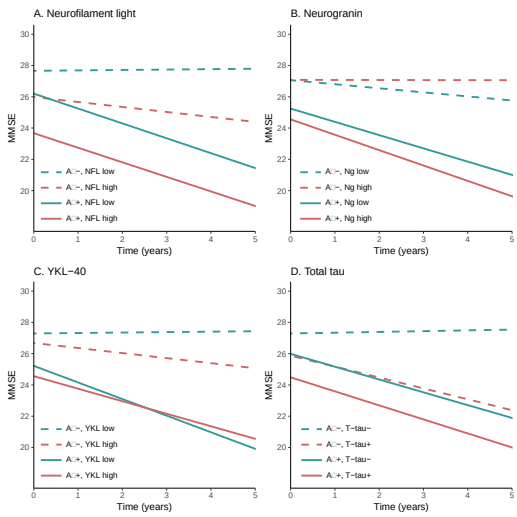


**Figure 2: Influence of CSF NFL, Ng, YKL-40 and T-tau on cognition in the total group.**

## Value of IMI collaboration

- Input from many different partners
- Having the resources to make a sustainable data sharing platform

## Impact & take home message

- Ng, NFL and YKL-40 are proteins involved in AD already in the preclinical stages and could be potential targets for therapeutics
- By sharing subject-level data and samples large new biomarker discovery studies are within reach

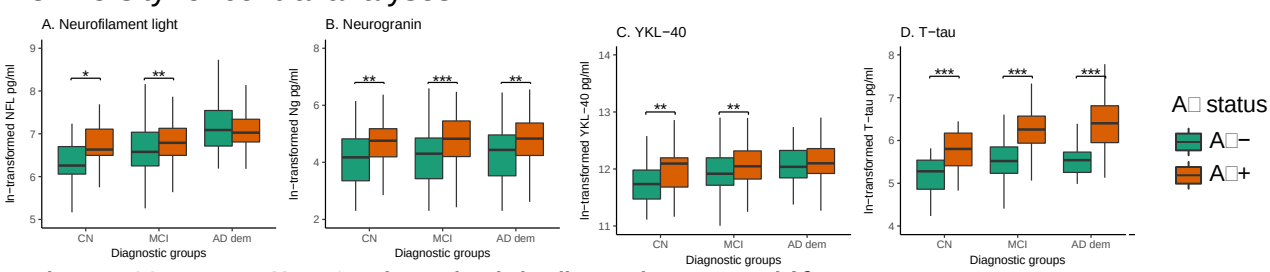


**Figure 1: CSF NFL, Ng, YKL-40 and T-tau levels by diagnostic groups and Aβ status**

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