PMI-AD

Precision Medicine in Alzheimer's Disease

Alzheimer's disease (AD) is characterized by brain nerve cell death and dementia, but before dementia, leading up to these final and irreversible end-points we first see loss of synapses, which are the contacts between nerve cells allowing us to think, learn and function as independent beings.

Coincident with early synaptic loss we also see activation of brain immune cells, eventually leading to brain inflammatory processes. These immune cells, called microglia. are intimately connected to the synapses, pruning and nurturing connections along with normal learning- and homeostatic processes in the healthy brain. Connected to incipient AD pathology immune cell properties are changed, inflammatory processes predominate, and synapses are lost. However, the impact of these changes varies both between patients and disease stages.

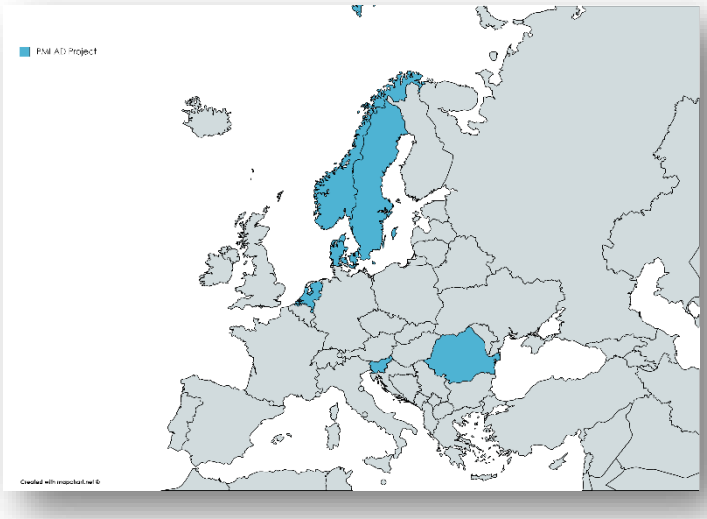
Interestingly, inflammation and synapse loss are linked to premorbid genetic predispositions, and proteomic changes in cerebrospinal fluid and blood, and imaging changes, as seen e.g. with brain magnetic resonance techniques. Thus, PMI-AD will profile each patient for these types of changes, as a starting point for precision therapies.

In parallel, the changes will be modelled in AD patient-derived (stem cell) immune- and nerve cell cultures, where effects of putative therapeutic interventions will be tested. The most promising therapies will be further tested in AD transgenic animal models, and adapted to therapeutic trials in patient cohorts stratified and targeted for stage, immune activation and synaptic affection. Lastly, impacts on societal health- and care costs will be calculated based on diagnostic and intervention-strategies needed for clinical implementation.

Total Funding : 2 M€

Duration : 3 years

Coordinator : Tormod Fladby
✉ : tormod.fladby@medisin.uio.no



Consortium Members

	Tormod Fladby	Department of Neurology, Akershus University Hospital, University of Oslo, Norway
	Prof Pieter J Visser	Amsterdam UMC (AUMC) Alzheimer Ctr. Netherlands
	Prof Bengt Winblad	Karolinska Institute, Sweden
	Prof Kaj Blennow	University of Gothenburg, Sahlgrenska Academy, Sweden
	Prof Milica Kramberger	University of Ljubljana, Dept of Neurology, Slovenia
	Prof Mads Nielsen	University of Copenhagen, Dep Computer Science, Denmark
	Prof Bogdan Popescu	Carol Davila" University of Medicine and Pharmacy Bucharest Romania