

## EPI-AD

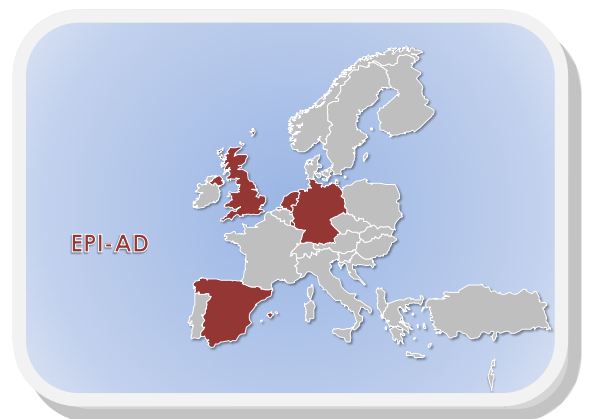
### Targeting epigenetic dysregulation in the brainstem in Alzheimer's disease

Alzheimer's disease (AD) is a severe neurodegenerative disorder resulting in progressive cognitive impairment. Previous work indicates that so-called epigenetic mechanisms (i.e. reversible changes to the DNA induced by the environment) represent critical factors in the development and course of AD. Moreover, the early occurrence of various neuropsychological symptoms suggests a key role for the brainstem, a brain region known to be critically important for the regulation of the stress response, in AD.

Therefore, we aim to elucidate the exact role of epigenetic dysregulation in the brainstem in the pathogenesis of AD. For this purpose, we will examine post-mortem brainstem tissue derived from AD patients, and matched controls, for epigenetic differences. By investigating AD-specific epigenetic profiles in the blood of individuals suffering from Mild Cognitive Impairment (MCI), we aim to determine the predictive (biomarker) value of selected epigenetic signatures. Furthermore, we will test a novel model for AD using neuronal cells generated from the blood cells of AD patients.

By doing so, we aim to fill the vital gap in our understanding of the link between stress, epigenetic dysregulation and the development of AD, which may lead to novel targets to better diagnose, prevent, attenuate or possibly reverse the pathophysiology of this disorder.

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