· Contact Person/Scientist in charge (datos del IP del grupo de investigación o responsable científico)

- o Name and Surname: JAVIER SAEZ VALERO
- o Email: j.saez@umh.es

· Department / Institute / Centre (datos del centro/departamento donde estaría ubicado el investigador a contratar)

- o Name: INSTITTUTO DE NEUROCIENCIAS, UNIVERSIDAD MIGUEL HERNANDEZ DE ELCHE
- o Address: Campus de San Juan, 03550 SANT JOAN (Alicante)
- o Province: Alicante

· Brief description of the Centre/Research Group (including URL if applicable)

1. Relationship between Aβ and presenilin-1 with acetylcholinesterase
2. Reelin in Alzheimer's disease: Aβ and P-tau cross-talk, a role for Reelin?
3. New Alzheimer's diagnostic biomarkers:
    - 3.1. Glycoforms of proteins
    - 3.2. Aβ related proteins

· Project description

Our aim at the *Instituto de Neurociencias* of the Miguel Hernández University is to introduce a research line into Alzheimer's disease (AD) and dementia that originated from a basic point of view but, that is relevant to the development of clinical-diagnostic applications. Therefore, the translational benefits of our research lie in the fact that we not only aim to clarify the pathological mechanisms behind these diseases, but also to define potential diagnostic tools and/or processes with therapeutic relevance. Our group is also member of CIBERNED (an ISC-III Center for Networked Biomedical Research focused in neurodegenerative diseases).

In recent years, we have been involved in studying how β-amyloid influences the expression of acetylcholinesterase (AChE, a key enzyme of the cholinergic system). In addition, we have described for the first time a direct association between presenilin 1 (PS1, a key enzyme in the proteolytic processing of amyloid protein precursor) and AChE, which may be relevant for the pathological progress of dementia and the design of therapeutic strategies.

We are pioneers in describing an altered expression and glycosylation patterns of the glycoprotein Reelin in AD. Reelin is a signaling protein that modulates synaptic function and plasticity in the mature brain, thereby favouring memory formation. Our effort is to demonstrate a novel mechanism by which β-amyloid regulates Reelin expression, thereby influencing its signaling cascade that ultimately controls tau phosphorylation.

Furthermore, we evaluate the diagnostic potential and methodological approaches for analysis of particular glycoforms of proteins, which improve sensitivity and specificity of the biomarkers. We also develop assays to identify secretase-related proteins, related with β-amyloid metabolism, in the cerebrospinal fluid. We also collaborate in the BiomarkAPD project (a JPND initiative of the UE) and the Society for CSF analysis and clinical neurochemistry in the validation and standardization of CSF biomarkers.

· Research Area: Life Sciences (LIF)

· Applications: documents to be submitted and deadlines (documentación que los investigadores deberán enviar al centro para establecer el contacto: CV, cartas de referencia…)