Project Nº 01
Title: Validating plasma microRNAs as biomarkers of Alzheimer´s disease: a clinical, neuroimaging and molecular genetic study
Department/ Laboratory Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc. CUN/CIMA. Neurology department and Neuroscience lab.
Director 1: Marta Fernández Matarrubia Contact: mfernandezma@unav.es

Summary:

Alzheimer´s disease (AD) is the first cause of dementia in the population. There is no consensus for a blood-based test for the early diagnosis of AD. Expression profiling of circulating non-coding RNA, microRNAs (miRNAs), has revealed diagnostic potential in human diseases. Circulating miRNA are found in small vesicles known as exosomes within biological fluids such as human plasma. The aim of this work will be to determine a set of differential plasma miRNA biomarkers in AD / mild cognitive impairment (MCI) due to AD, which may aid in diagnosis. The Project will include two phases. In phase 1, using next-generation deep sequencing we will profile circulanting and exosomal miRNA from plasma of 60 subjects (20 AD, 20 MCI due to AD and 20 controls) collected from the Biobank of the University of Navarra. This miRNA profile will be validated using quantitative reverse transcription PCR (qRT-PCR). In phase 2, we will include an independent cohort of a total of 300 subjects with AD (n=100), MCI (n=75), other dementias (n=75) and cognitively healthy controls (n=50). Study including clinical, medical and cognitive assessments, functional and amyloid neuroimaging with positron emission tomography (PET) will be assessed. Diagnostic accuracy of the AD-specific miRNA signature for distinguishing AD/MCI, other dementias and controls will be determined. Furthermore, miRNA levels will be correlated with 1) brain metabolism measured by FDG-PET using voxel-based analyses (SPM 8), 2) amyloid neuroimaging burden, and 3) neuropsychological test performance. Our data will validate an exosomal and circulating miRNA signature that works as a suitable peripheral screening tool for AD.

yes		Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?
no	X	