ImmunoTools *special* Award 2016

Francisco Ciruela, Ph.D.
Group leader

University of Barcelona-IDIBELL
Medical School, Bellvitge Campus
08907 Barcelona, Spain

Position: Associate Professor of Pharmacology

Neuroinflammatory fingerprint of cognitive impairment and late-onset depression in elderly and early stages of Alzheimer's disease

Late-onset depression and cognitive impairment are very common in the elderly and cause a great deal of misery, in addition to representing a social and economic concern. Many of these individuals develop dementia of Alzheimer type and there is the suspicion that late-depression (LD) and mild cognitive impairment (MCI) is linked by the same pathogenic process.

We aim to study the neuroinflammatory changes associated to the early loss of noradrenergic neurons from the locus coeruleus (LC) which have been related to the early stages of Alzheimer's disease. To this end, we will perform parallel animal model experiments together with clinical and neuroimaging studies in a selected group of patients suffering LD and MCI from the Bellvitge Hospital. Thus, our final goal is to phenotype the immunological changes associated to LC neuroimmflation and to use it as co-biomarker, together with clinical and neuroimaging studies, in the diagnostic of LD and MCI associated to Alzheimer's diseae (AD).

Accordingly, we will evaluate the role of the noradrenergic system in the interplay between immune and neuronal systems in the LC of healthy and diseased brains. Thus, we will characterize the noradrenergic system components in isolated neurons and infiltrated T cells from healthy and diseased brains. Hence, the phenotype of infiltrated T lymphocytes (e.g. resting: $CD4^+CD25^-$ *vs*. activated: $CD4^+CD25^+$) as well as the expression of noradrenergic system components will be correlated with the disease stage. In addition, similar studies will be performed in isolated peripheral $CD4^+$ T-cells from healthy controls and humans suffering LD and MCI and the T cell activation degree will be assessed.

The impact of the patient's neuropathological conditions into the endogenous noradrenergic system of isolated peripheral T cells will be also investigated. Overall, a correlation with the disease stage and/or treatment will be performed to validate the neuroinflammatory fingerprint associated to cognitive impairment and late-onset depression in elderly and early stages of Alzheimer's disease.

ImmunoTools *special* AWARD for **Prof. Dr. Francisco Ciruela**

includes 25 reagents

FITC - conjugated anti-human CD3, CD4, CD8, CD11b, CD40, CD45RO, CD66b, CD69

PE - conjugated anti-human CD4, CD11b, CD 19, CD25, CD29, CD 56, CD69, TNFa

PerCP - conjugated anti-human CD8

APC - conjugated anti-human CD3, CD4, CD8, CD11b, CD25, CD40, CD45, CD69

DETAILS more AWARDS